



SPIN

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05³

What is SPIN?

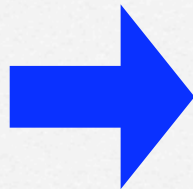
- Shared Pathology Informatics Network
- NCI sponsored consortium grant via cooperative agreement, 5 years for Phase I
- Regenstrief-Pittsburgh, Harvard-UCLA* are the two consortia
- Phase I intended to be research and proof of concept only

* Brigham & Women's Hospital
Beth Israel Deaconess Medical Center
Cedars-Sinai Medical Center
Children's Hospital
Dana-Farber Cancer Institute

Massachusetts General Hospital
Olive View Medical Center
UCLA Medical Center
VA Greater LA Healthcare System

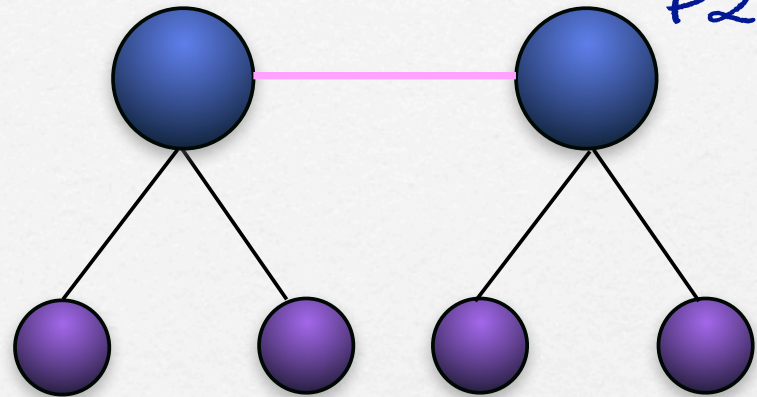
Research Goals

XML



```
<PathologyCase>  
  <Patient>  
    <uuid>392804723-47sed23490</uuid>  
  </Patient>  
  <Specimen>  
    <Dimensions>  
      <Size>34</Size>  
      <Weight>123</Weight>  
    </Dimensions>  
  </Specimen>  
</PathologyCase>
```

P2P



Consent



Speed



Web browser



Web server
Tomcat (Struts)

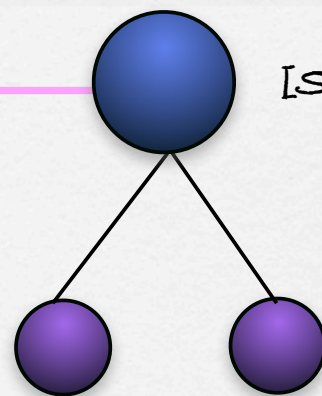
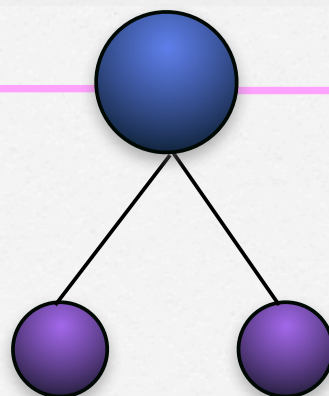
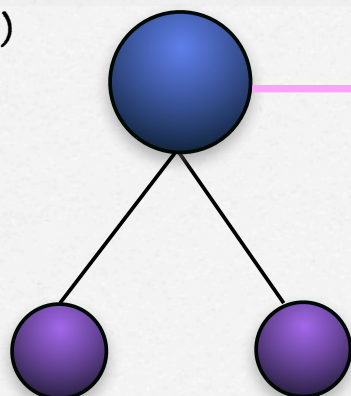


Query

SOAP



Tomcat (Axis)
JBoss (J2EE)
MySQL



[Super Nodes]

Peer Group

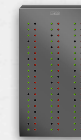
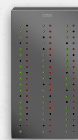
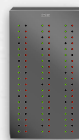
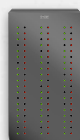
[Nodes]

SOAP
XML annotation



Submission

Data



Participation Steps

1. Map, and convert source data to submission schema
2. Establish a peer or identify an affiliate
3. Submit annotations to the peer
4. Perform queries
5. Request specimens

Clinical reports to coded annotations

Part II:

Received in formalin, labeled with the patient's name, medical record number and "Appendix (detached)" is a 3.2 x 1.4 x 1.1 cm appendix submitted separately from the main ileocectomy specimen. The serosal surface appears smooth, purple, and glistening. Serial sectioning reveals no mucosal abnormalities, ulcerations, thickening, or perforations. The periappendiceal tissue appears grossly normal. The both halves of the bisected tip, and sections through the body of the appendix are submitted in Block A.

Diagnosis:

I Right colon, Ileocectomy:

1. Invasive, poorly differentiated Adenocarcinoma (see synoptic report)

Comment: Though an abundant amount of extracellular mucin is present in the sections examined, less than 50% of the malignant cells display mucinous features, thus the criteria for classification of this tumor as mucinous type of colonic adenocarcinoma are not met.

2. Adenoma with high-grade dysplasia
Note: The dysplasia is located superficially in the colonic epithelium in the sections examined. It is not invasive into the lamina propria or stalk is noted.
3. Mild chronic active colitis.
4. Colonic stricture with transmural inflammation.

<Specimen>

<Topology>

<Term Code="C0227375" Source="UMLS">Right colon</Term>

</Topology>

<Diagnosis>

<Term Code="C0267375" Source="UMLS">Adenocarcinoma</Term>

<Modifier Code="C0205177" Source="UMLS">Poorly Differentiated</Modifier>

<Modifier Code="C0205080" Source="UMLS">Invasive</Modifier>

</Diagnosis>

<Diagnosis>

...

II Appendix:

1. Intramucosal mucus pool, no evidence of colonic adenocarcinoma seen.
2. Carcinoid tumor, benign. 0.5 cm
Note: Immunohistochemical studies performed on carcinoid tumor cells will be reported in an

"Colon Cancer Synopsis"

Schema

- ❑ Leverages other data models (HL7)
- ❑ Supports variable granularity
- ❑ Modular and extensible
- ❑ Standard + Flexible => Participation

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Identify or establish a peer

- Identify a peer to be affiliated with,
or
- Obtain a computer running Linux, Windows2000/XP, or Mac OS X
- Download and install software package to create a SPIN node
- Configure the node as a SPIN peer

Peer functions

- Accept and store annotated submissions
- Discover other peers within its own group
- Respond to queries
- Initiate a query on the behalf of a user*
- Aggregate query results and forward to a query tool for presentation*
- *Queue specimen retrieval requests*

* SuperNodes only

Participation Steps

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Clinical Report

Parsed into submission XML, remains compliant thereafter

①

Ordering of activities is arbitrary, allows for flexible workflow

Identifiers

Case

②

Identifiers

Scrubbed Case

Identifiers

Coded Case

④

UUID

Coded Case

NODE

TOOL SUITE

③

Identifiers

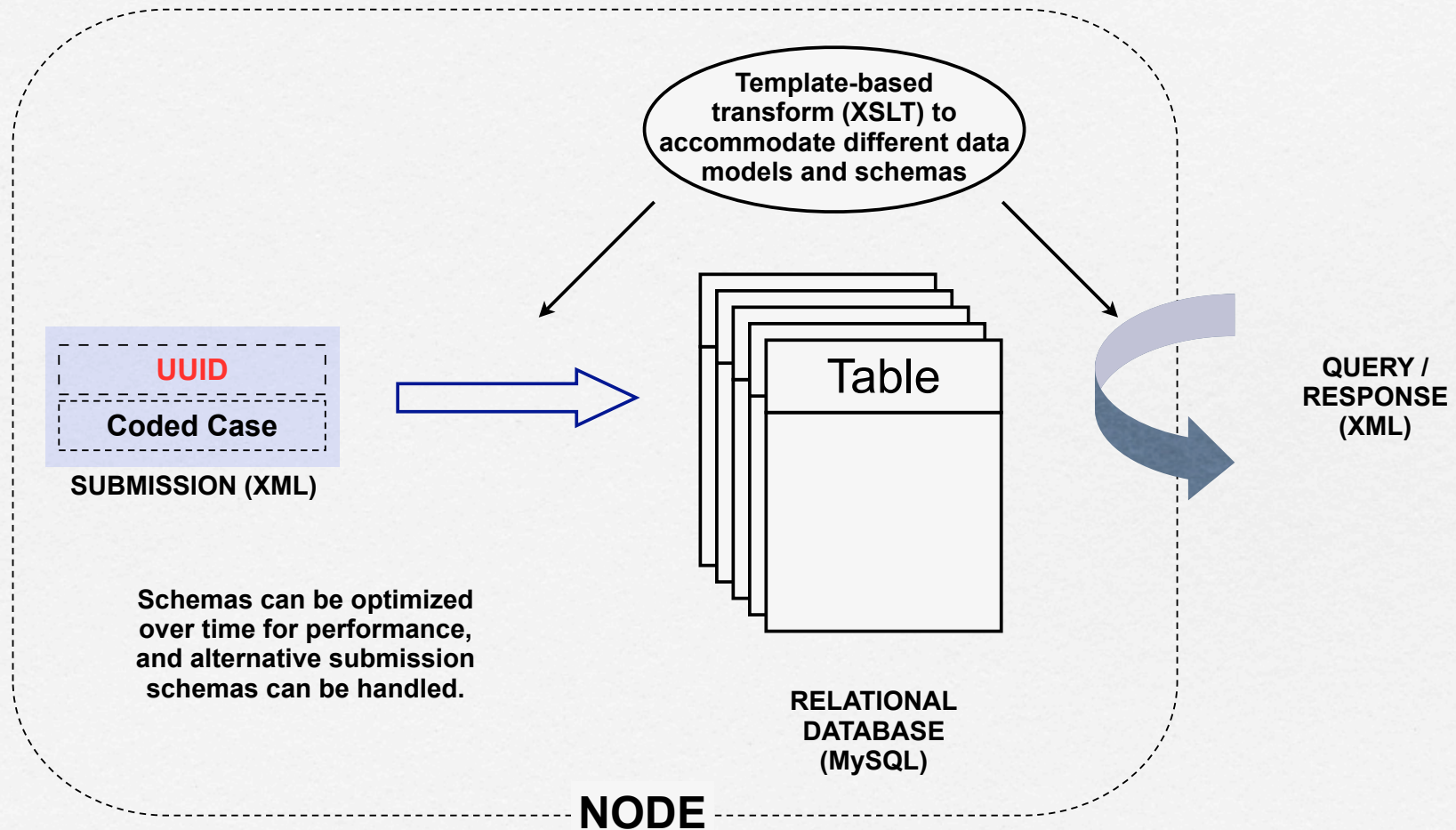
UUID

UUIDs assigned based on new or existing patient or case, providing the opportunity to manage updates and linkage

Only individually de-identified data exists in node

CLIENT-SIDE CODEBOOK

Inside the CHIRPS Node



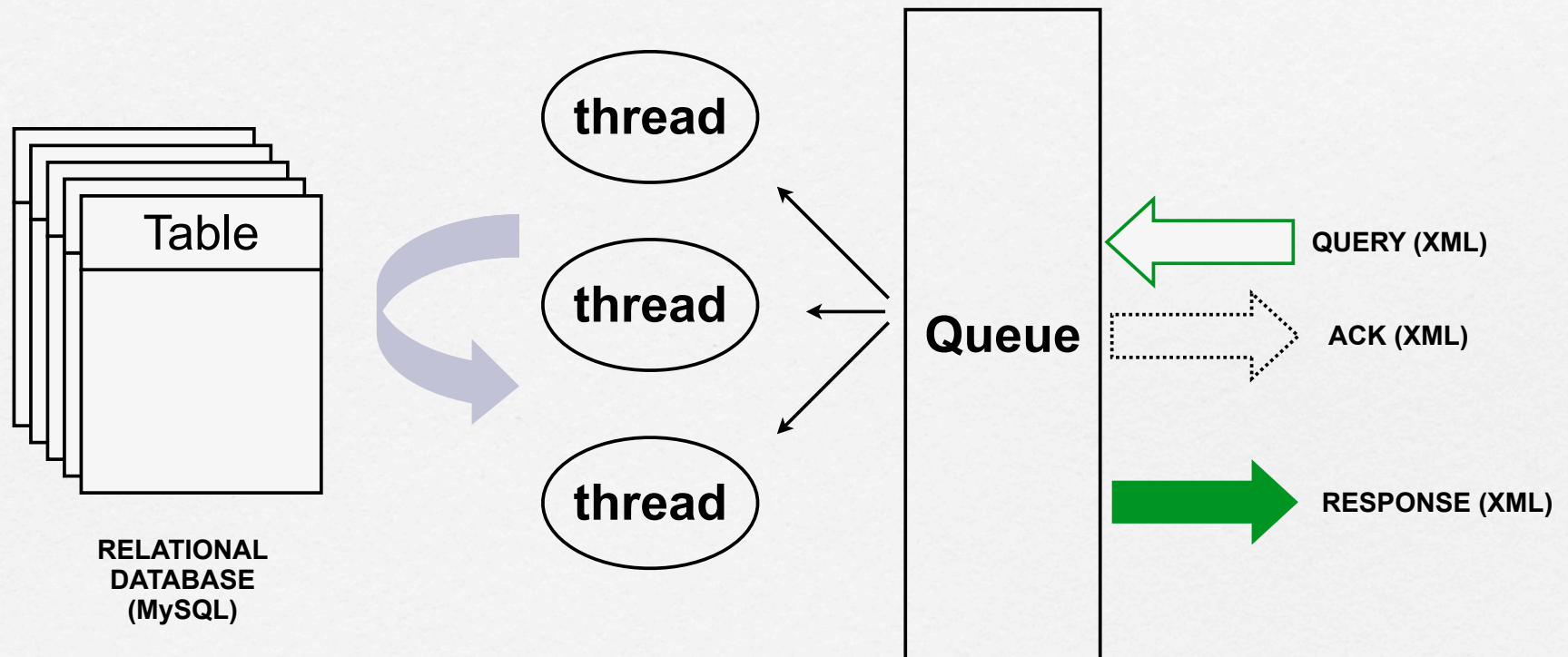
Participation Steps

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Query

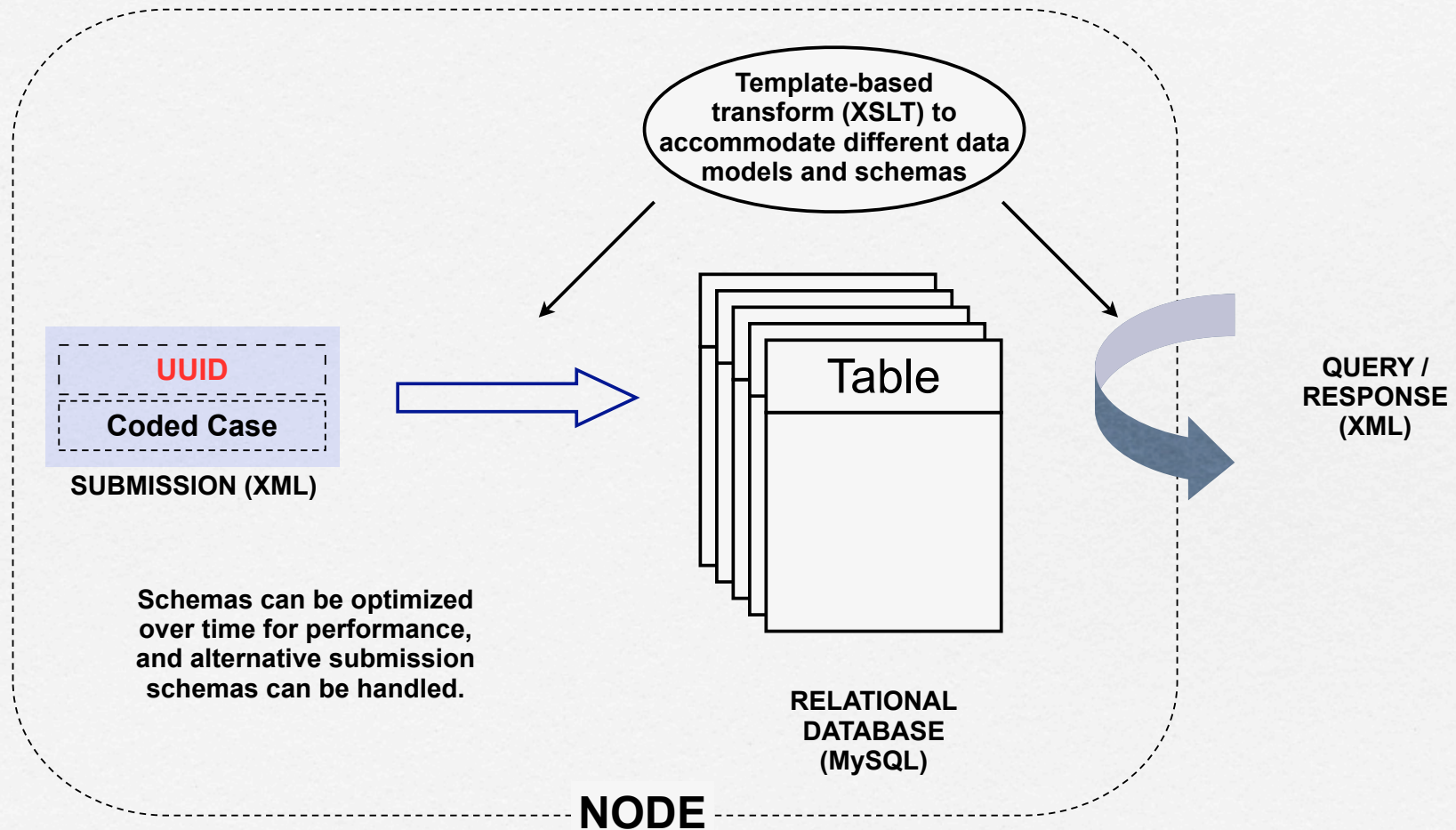
- ❑ Common syntax developed jointly with Indiana
- ❑ XML (SOAP message)
- ❑ Local transformation, therefore database schema **independent**

Inside the CHIRPS Node II

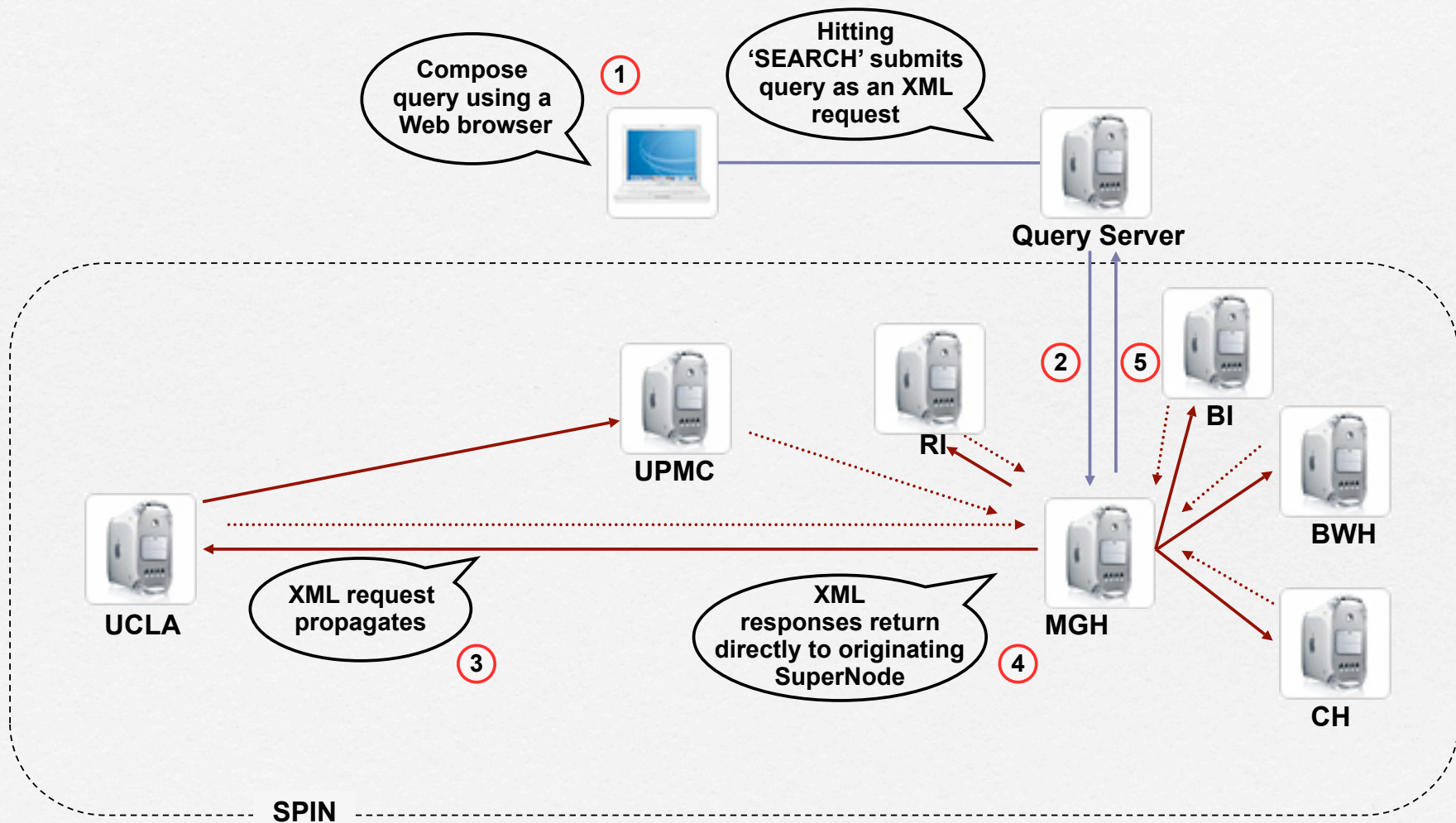


Scalable queue-based,
multi-threaded internal
architecture

Inside the CHIRPS Node



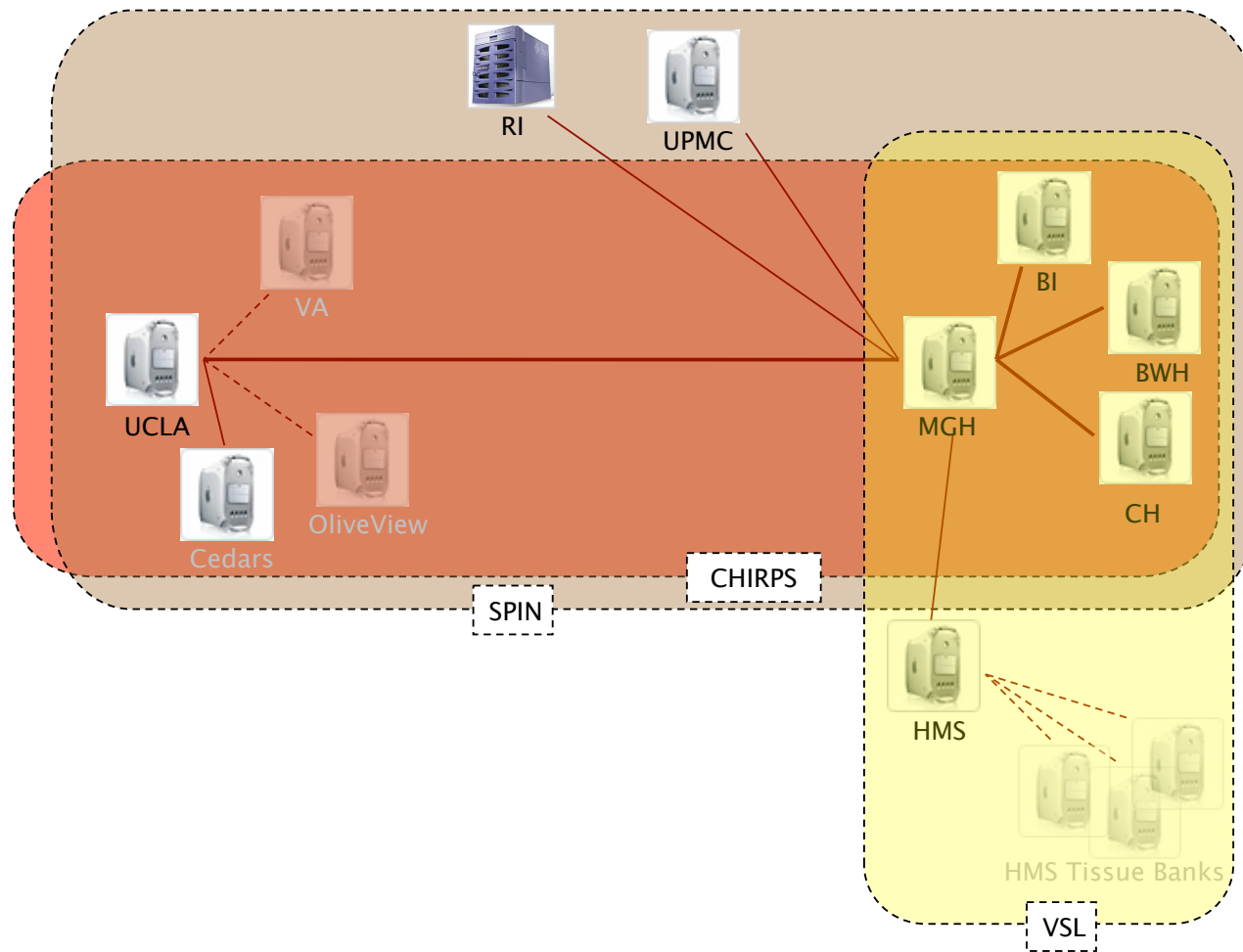
Query Propagation



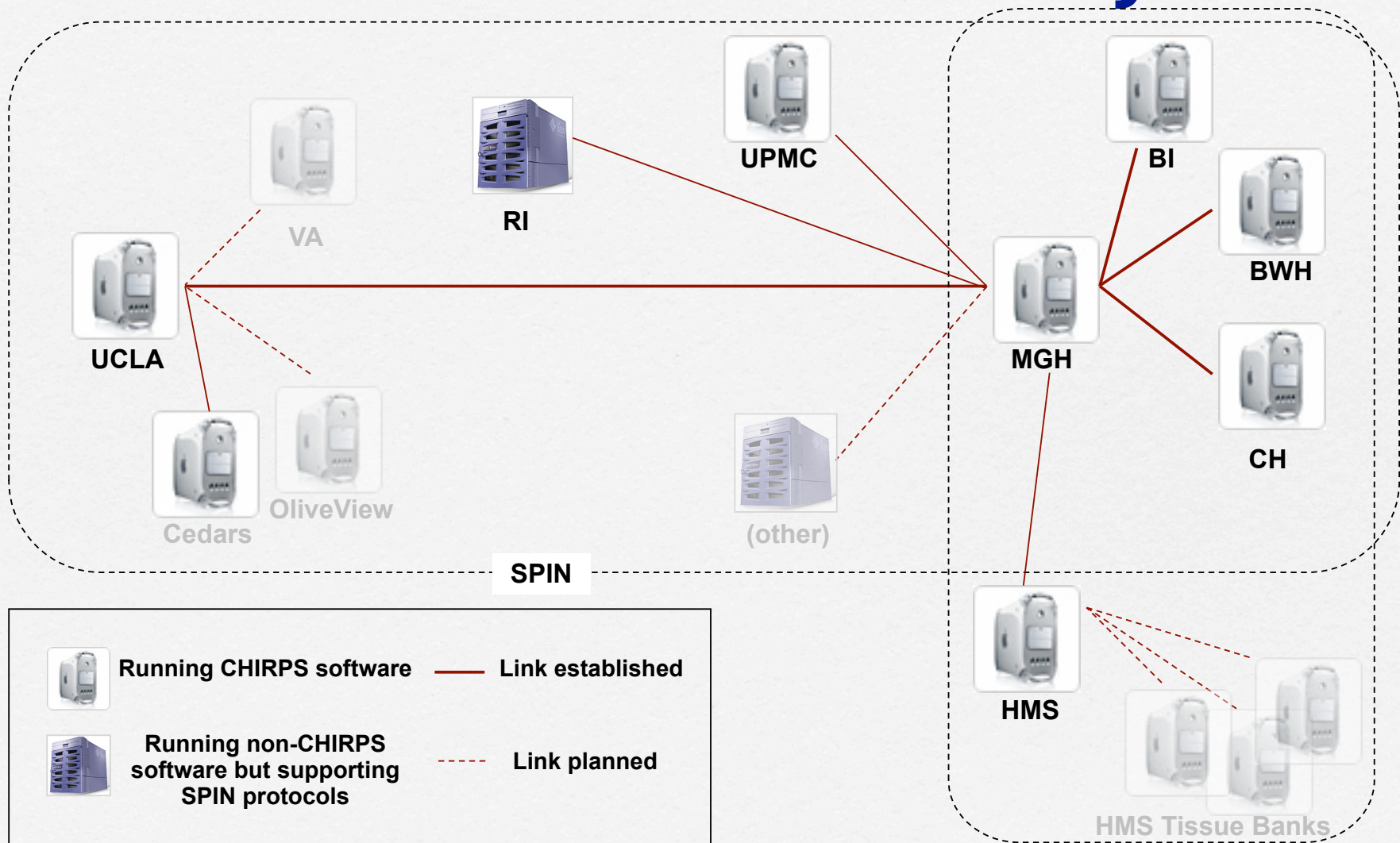
Peer Groups

- ❑ Set of nodes with common attributes
- ❑ Each group defines own topology
- ❑ Peers can have different roles in different groups
- ❑ Default “local group” for testing

Peer Groups



SPIN Network Today



SPIN Architecture & Protocols

- ❑ Accommodates alternative node implementations
- ❑ Accommodates alternative query servers
- ❑ Will accommodate alternative domain data models and schema (scale within as well as across domains)
- ❑ Open Source development model to promote extensions
- ❑ Allows for commercial needs

Current Products Available

- ❑ Node / SuperNode (JBOSS/MySQL)
- ❑ Submission tools (J2EE)
- ❑ Scrubber scripts (Perl)
- ❑ Web-based Query tool (Tomcat)
- ❑ Web-based Administration tool (Tomcat)
- ❑ First-pass autocoder (GATE, Java)
- ❑ Submission annotation schema (XML/XSD)
- ❑ SPIN message schemas (XML/XSD)
- ❑ SPIN services (SOAP/WSDL)
- ❑ Packaging and installation scripts and docs (HTML)
- ❑ IRB Templates - in progress (RTF)